

National Entry of

Serial No.: PCT/JP2004/004372

Filed: Herewith (International Filing date March 26, 2004)

AMENDMENTS TO THE SPECIFICATION:

Please delete the paragraph beginning at page 3, line 7:

-- ~~SUMMARY OF THE INVENTION~~ --

Please insert the following paragraph at page 3, between lines 21 and 22:

-- SUMMARY OF THE INVENTION --

Please insert a new paragraph at page 6, between lines 21 and 22 with the following rewritten version:

-- Fig. 8 is a block diagram showing a signal processing circuit according to another embodiment of the present invention. --

Please replace the paragraph beginning at page 7, line 12 with the following rewritten version:

-- The weight detecting mechanism 14 has three load cells (weight detecting means and vibration detecting means, and weight detecting device and vibration detecting devices) 31 - 33. First, the weight detecting load cell 31, which is employed for detecting the weight of the object X, has a fixed end 31a fixed to the fixed base 13 and a free end 31b coupled to a lower end portion of the support frame 11. The first vibration detecting load cell 32, which is smaller in size than weight detecting load cell 31, is employed for detecting vibration components caused by vibrations of the floor represented by an arrow "a". The first vibration detecting load cell 32 has a fixed end 32a fixed to the fixed base 13, and also has a free end 32b to which a weight member 34 of a known weight is attached. Similarly to the first vibration detecting load cell 32, a second vibration detecting load cell 33, which is smaller in size than weight detecting load cell 31, is employed for detecting vibration components due to driving of motor 25 indicated by an arrow b. The second vibration detecting load cell 33 has a fixed end 33a, which is fixed to the free end 31b of the weight detecting load cell 31 via the lower end portion of the support frame 11, and also has a free end 33b to which a weight member 35 of a known weight is attached. --

Please replace the paragraph beginning at page 9, line 16 with the following rewritten version:

-- The arithmetic circuit 44 forms the weight calculating means together with the A/D converters 43 ... 43 and the low-pass filters 45 ... 45 ~~filter 45~~. It performs predetermined arithmetic processing for correction on the received detection signal to remove the floor vibration components and the motor vibration components from the detection signal issued from the weight detecting load cell 31. Specifically, the arithmetic circuit 44 is formed of a DSP (Digital Signal Processor), a microcomputer or the like. --

Please insert the following new paragraph at page 12, between lines 27 and 28:

-- ALTERNATIVE EMBODIMENTS --

Please replace the paragraph beginning at page 12, line 28 with the following rewritten version:

-- (a) In the foregoing embodiment, the floor vibration components are first subtracted from the detection signal of the weight detecting load cell 31, and then the motor vibration components are subtracted. However, it is possible to employ a manner in which the floor vibration components and the motor vibration components are first added together, and then are subtracted from the detection signal of the weight detecting load cell 31. --

Please replace the paragraph beginning at page 13, line 20 with the following rewritten version:

-- (b) According to the foregoing embodiment, various kinds of arithmetic processing are performed with the transfer functions $G1(s)$ - $G6(s)$ for providing a signal matching with the weight of the object X. Under limited conditions (or in accordance with required level of detection precision), however, constants may be used instead of the transfer functions $G1(s)$ - $G6(s)$. For example, where the detection signals have relatively low frequencies owing to arrangement of the low-pass filters 42 ... 42, and it may be possible to ignore a difference in frequency-dependency of the cell sensitivity between the load cells as

shown in Fig. 6, constants may be used as the correction ratios for the arithmetic correction processing of the detection signals of the load cells instead of the transfer functions. These constants may be set in advance based on the characteristics of the respective load cells. --

Please replace the paragraph beginning at page 14, line 3 with the following rewritten version:

-- (c) In the foregoing embodiments, the low-pass filter 45 is arranged immediately downstream from the arithmetic circuit 44. However, the low-pass filters 46 ... 46 may be arranged downstream from each of the A/D converters 43 ... 43 as shown in Fig. 8. Thereby, even in the case where the arithmetic circuit 44 has an insufficient capability with respect to the sampling periods of the detection signals of the load cells 31 - 33, the arithmetic circuit 44 can maintain its operation efficiency by arranging the low-pass filters 46 ... 46 immediately downstream from each of the A/D converters 43 ... 43. --

Please delete the paragraph beginning at page 14, line 12 with the following rewritten version:

-- (Industrial Applicability) --

Please replace the abstract with the following rewritten version:

-- ~~The invention provides a weight detecting apparatus, which can eliminate an influence by vibration disturbance exerted from a device installation side and an object placing side, and thereby can improve detection precision.~~ The weight detecting apparatus includes a weight detecting load cell (31) having a fixed end (31a) fixed to a fixed base (13) arranged on a floor and a free end (31b) bearing a weight of an object (X), a first vibration detecting load cell (32) arranged on the fixed end (31a) side of the weight detecting load cell (31) for detecting a vibration component on the fixed end (31a) side, i.e., a floor vibration component, and a second vibration detecting load cell (33) arranged on the free end (31b) side of the weight detecting load cell (31) for detecting a motor vibration component on the free end (31b) side, i.e., the motor vibration component. The weight detecting apparatus

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precisely detects the weight of the object (~~X~~) by removing the vibration component from the detection signal of the weight detecting load cell (~~31~~) based on the detection signals of the respective load cells (~~31—33~~). --